

PP45. Antimicrobial activity and chemical variability of the essential oil of *Thymus hyemalis* Lange cultivated in the region of Murcia (Spain)

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Thymus hyemalis Lange (Lamiaceae), winter thyme, is an endemic shrub growing on the Southeastern Iberian Peninsula, mainly in Alicante, Murcia, and Almería. The main goal of the present work was to evaluate the chemical variability of the essential oils from this species and their antimicrobial activity based on bacterial growth inhibition curves. The chemical variability of the essential oils from this species was analyzed by means of gas chromatography-mass spectrometry. The oils were assayed to evaluate their bacterial growth inhibition curves against *Escherichia coli* CECT 45, *Salmonella enterica* subsp. *enterica* CECT 443, *Enterococcus faecalis* CECT 481, and *Listeria monocytogenes* CECT 911. Among the total of 53 cultivated plants, collected from an experimental plot of land in Torreblanca (Murcia, Spain), it was possible to identify the presence of eight different chemotypes, based on the chemical composition of their essential oils. The majority of the plants (53%) belonged to a phenolic chemotype, represented by a high content of thymol, and followed by *p*-cymene, eucalyptol, and carvacrol. The 48-h growth inhibition curves were obtained for the essential oil tested in concentrations that ranged from 156 to 5000 ppm. The essential-oil chemical variability was represented by the following chemotypes: (A) carvacrol (68%) and *p*-cymene (17%); (B) carvacrol (52%) and *p*-cymene (25%); (C) thymol (50%), *p*-cymene (25%), and γ -terpinene (10%); (D) *p*-cymene (44%) and thymol (41%); (E) *p*-cymene (41%) and thymol (30%); (F) *p*-cymene (40%) and carvacrol (33%); (G) eucalyptol (38%) and carvacrol (25%); (H) eucalyptol (38%) and thymol (22%). Besides, the essential oil yield ranged from 1.4 to 4.6%, showing statistically significant differences among the plants.

From these results it can be summarized that the chemotype C showed the highest effect against *S. enterica* (312 ppm), *E. faecalis* and *L. monocytogenes* (625 ppm), followed by the chemotypes with 60-50% of carvacrol, and then with 44% of *p*-cymene and 41% of thymol. The chemotypes with 38-30% of carvacrol, or thymol with *p*-cymene or eucalyptol did not inhibit the growth of *E. coli* and *S. enterica* (625 ppm), or of *L. monocytogenes* and *E. faecalis* (2500 ppm).

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